

Area of study

Your child will ... (Knowledge)

Your child will be able to... (Skills)

Autumn Term

Mathematical measures

- Be able to tell the time using an analogue clock
- Recognise standard units of measurement for mass, length, time and money
- Use mathematical equipment such as rulers and protractors to measure line segments and angles accurately
- Appreciate the use of scale in real life in contexts such as maps, plans and elevations and why a scale is important for working with such documents. Make connections to work in subjects such as Geography, Technology

- Convert between standard units of measurement for time, length, area, volume/capacity and mass
- Solve problems involving the use of scale in real life scenarios

Properties of number

- Understand and recognise different categories of number including odd and even
- Recognise and calculate square and cube numbers, introduce indices
- Understand the properties of prime numbers and be able to calculate and state whether a number is prime or not
- Recognise and use vocabulary such as integer, reciprocal, product, common
- Recognise factors of numbers by finding the product of 2 integers
- Make connection between multiples and times tables

- Calculate the lowest common multiple of two numbers by listing their multiples
- Calculate the highest common factor of two numbers by listing the factors

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Autumn Term

Place value and calculations

- Revisit methods for adding and subtracting numbers of different size
- Revisit methods for multiplication and division including numbers with remainders and how these can be written as fractions
- Calculate with indices with a power greater than 3
- Understand negative numbers and how to calculate with them, revisit adding and subtracting and introduce multiplying and dividing

- Use place value to multiply and divide integers by 10 or 100
- Use the hierarchy of operations (BIDMAS) in calculations including decimals to 2 places

Perimeter, area and volume

- Understand vocabulary and that perimeter is the distance around the outside of an object and is measured as a unit of length
- Understand that area is the surface of a 2 dimensional shape
- Apply formula for calculating area of rectangles, parallelograms, triangles and see the relationship between each and the corresponding calculations.
- Investigate how more complex shapes can be partitioned into known shapes to calculate areas

- Calculate the perimeter of compound shapes
- Calculate the area of shapes including rectangles, parallelograms and triangles
- Solve problems to find missing lengths when given area of a shape

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Fractions, decimals and percentages

- Understand the concept of a proper fraction being a number that is between 0 and 1 and that improper fractions are greater than one
- Use the language of fractions - numerator, denominator, improper
- Recognising and understanding equivalent fractions are equal to each other
- To simplify fractions by using knowledge of common factors to cancel down
- Use prior knowledge of adding and subtracting fractions and apply to improper fractions
- show that an integer can be converted to a fraction and how this links to converting

- Convert between mixed numbers and improper fractions
- Add and subtract fractions including mixed numbers
- Calculate fractions and percentages of amounts

Spring Term

Algebra

- Understand that numbers can be replaced with symbols
- Know vocabulary e.g. variable, term, expression
- Understanding inverse operations, and using this to find unknown values

- Manipulate expressions
- Able to simplify expressions
- Convert simple worded problems to algebraic forms

Averages

- Know the key vocabulary of averages – mode, median, mean and range
- Calculate with lists of numbers
- Know how to calculate the mode, median and range
- Know what the range represents as a spread of data and how to calculate
- Understand the meaning of averages and why and how we use them

- Calculate all averages (mode, median and mean) from a list of data
- Calculate all averages from tabulated data
- Calculate the range of a set of data

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Spring Term

Sequences

- Understand how sequences of numbers are generated using different rules – adding, multiplying
- Spot patterns in numbers and describe what is happening in the pattern to create a sequence
- Describe mathematically how to move from one term to the next

- Generate sequences of numbers in a variety of situations, for examples increasing and decreasing, using integers, fractions decimals.
- Explain how to continue both a linear and geometric sequence
- Recognise and create sequences visually

Graphs

- Understand the vocabulary of graphs, eg coordinates, quadrants, gradient, intercept
- Understand which axis is x and which axis is y
- Know how to plot coordinates using x and y values
- Substitute values into given equations to generate coordinates
- Discover that generating a table of values for one function will generate a series of coordinates that can be joined to create the corresponding graph.
- Generate $x=$, $y=$ and $y=x$ graphs

- Use and interpret coordinates in all 4 quadrants
- Plot graphs of linear functions in the form $y=mx+c$

Summer Term

Ratio

- Understand the term ratio is comparing how much of one item you have relative to another
- Knowing the vocabulary and mathematical notation for ratios eg : means to
- Spotting common factors between ratios to assist with simplifying
- Calculating ratios to find where $n:1$ or $1:n$ to visualise how much of the other part you have

- Simplify a ratio so that it can be stated in its simplest form
- Divide an amount into a ratio
- Apply the division of ratios into different contexts such as money, weights etc

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Summer Term

Proportion

- Understand the term proportion and that mathematically we are comparing the part of something, relative to the whole
- Understand that to calculate numbers that are in proportion we will be multiplying and dividing and not adding and subtracting so as to keep values proportionate to one another
- Calculate the relationship between the two values to see how they increase relative to one another
- Look at how to calculate 1 of the parts and how to apply the same calculation to get the corresponding value. (Unitary method)
- Use answers from unitary method to then calculate other values and start to compare between different products.

- Apply relevant methods including the unitary method to solve problems involving directly proportional relationships
- Start to look at comparing proportional relationships to make comparisons (best buys)

Transformations

- Understand the vocabulary of transformations including rotation, reflection, translation, enlargement
- Recognise shapes and how they appear when they are in different orientations but that they remain the same shape
- Revisit the use of coordinates for centres and the use of drawing $y=$ and $x=$ graphs for mirror lines
- See how the relative distance of a point to the mirror line is the same on either the image or reflection
- Describe translations using up, down, left and right and investigate how to described these with vector notation
- Consider rotating shapes, how we can described in terms of parts of a turn, and link to degrees

- Be able to describe and or draw a translation of a shape upon a scaled axis
- Be able to describe and or draw a rotation on a scaled axis involving 4 quadrants
- Reflect shapes in horizontal and vertical mirror lines